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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/532,799	04/25/2005	Masumi Takamura	2005-0511A	6704

513 7590 07/05/2007  
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WASHINGTON, DC 20006-1021

EXAMINER
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ASINOVSKY, OLGA.

ART UNIT	PAPER NUMBER
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1711

MAIL DATE	DELIVERY MODE
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07/05/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/532,799	<b>Applicant(s)</b> TAKAMURA ET AL.	
	<b>Examiner</b> Olga Asinovsky	<b>Art Unit</b> 1711	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 April 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/25/05; 7/22/05</u>  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. Claims 10 and 11 rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for polyolefin resin having a beta-substituted propenyl group as a pendant is a product (residual chain) which is produced by a reaction of a specified chain transfer agent with a polymer radical of a polyolefin molecule generated in polyolefin resin, does not reasonably provide enablement for any polyolefin resin having a beta-substituted propylene segment. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

Factors to be considered in determining whether a disclosure meets the enablement requirement of 35 USC 112, first paragraph, have been described by the court in *In re Wands*, 8 USPQ 2d 1400 (CA FC 1988). *Wands* states at page 1404, the court set forth eight factors to consider when assessing if a disclosure would have required undue experimentation. Citing *Ex parte Forman*, 230 USPQ 546 (BdApls 1986) at 547 the court recited eight factors:

(1) The nature of the invention; (2) the state of the prior art; (3) the relative skill of those in the art; (4) the predictability or unpredictability of the art; (5) the breadth of the claims; (6) the amount of direction or guidance presented; (7) the presence or absence of working example and (8) the quantity of experimentation necessary.

The nature of the invention and breadth of claims

The claimed invention is a method for producing a graft copolymer by reacting a vinyl monomer having an acid with polyolefin resin having a beta-substituted propenyl group as a pendant. In particular, in the present specification at page 14, paragraph [0074] a polyolefin resin having beta-substituted propenyl group as a pendant is produced by reaction of a specific chain transfer agent with a polymer radical of a polyolefin molecule generated in polyolefin resin. A method in each independent claim 10 and 11 for producing a graft copolymer by reacting a vinyl monomer having an acid with polyolefin resin having a beta-substituted propenyl group as a pendant does not clearly disclose how to obtain a pendant beta-substituted propenyl group in the polyolefin resin. There is no definition for a polyolefin resin before grafting. The starting polyolefin having a beta-substituted propenyl group is open to any functional or non-functional group and encompasses a broad range of compounds.

The state of the prior art

In the prior art to JP 2004051649 as discussed below, the started polyolefin resin before graft reaction is a modified polyolefin resin having a structure in which beta-substituted propenyl group is suspended in the polyolefin molecular chain by introducing a cleavage type chain transfer agent.

The relative skill of those in the art:

The relative skill of those in the art is high.

The predictability or unpredictability of the art:

In the present specification in the paragraph [0074] a component having a beta-substituted propenyl group is a chain transfer agent having a phenyl group, cyano group or acetoxy group. The beta-substituted propenyl group is specified in the paragraph [0075] at page 14. These chain transfer agents are reacting with a polymer radical of a polyolefin molecule generated in polyolefin resin before a grafting step. The specification recites the specified step of producing a polyolefin resin having a beta-substituted propenyl group as a pendant by reacting of an addition-fragmentation chain transfer agent with a polymer radical of a polyolefin molecule generated in polyolefin resin. There is no definition for a beta-substituted propenyl group in a polyolefin resin that is reacted with a vinyl monomer having an acid group. Thus, the synthesis of polyolefin resin having beta-substituted propenyl group as a pendant is expected to be unpredictable.

The amount of direction or guidance presented:

In the present specification in the paragraph [0074] a component having a beta-substituted propenyl group is a chain transfer agent having a phenyl group, cyano group or acetoxy group. The beta-substituted propenyl group is specified in the paragraph [0075] at page 14.

The presence or absence of working example:

Example 1 on page 30, line 1 discloses an addition cleavage type chain transfer agent as 2,4-diphenyl-4-methyl-1-pentene for producing polypropylene resin having 2-phenyl-1-propenyl group as a pendant.

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Note that the working example is critical factor to be considered, especially in a case involving an unpredictable and undeveloped art such as the discovery of novel method of producing a graft copolymer. See MPEP 2164.

The quantity of experimentation necessary.

2. It is concluded that it would have require undue experimentation for one having ordinary skill in the art to practice the claimed invention to find appropriate step to create a beta-substituted propenyl group in a polyolefin resin. *In re Wands*, 858, F.2d at 737, 8 USPQ 2d 1400, 1404 (Fed Cir. 1988).

**Specification**

3. The disclosure is objected to because of the following informalities: several words are without space, for example, page 1 paragraph [0003], line 3; page 2, paragraph [0007], line 5; page 3, paragraph [0012], line 3. It is difficult to read. It will have a printing problem.

Appropriate correction is required.

**Claim Rejections - 35 USC § 103**

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2004051649 in view of JP 2885919 (cited by applicants) or Roberts et al U.S. Patent 5,955,547.

JP 2004051649 has a Publication Date of February 19, 2004 and the Application Date of July 16, 2002. JP 2004051649 is available prior art under 102 (d).

JP 2004051649 (hereinafter JP'649) discloses the polyolefin resin having a structure in which beta-substituted propenyl group is suspended in the polyolefin molecular chain. The method involves mixing a polyolefin resin and an addition cleavage type chain transfer agent. The method for producing a started polyolefin resin having a beta-substituted propenyl group is readable in the present claims. The modified polyolefin resin has excellent grafting property, Abstract. There is no translation of JP'649, however, presumably, the modified polyolefin resin can be grafted.

JP 2885919 (hereinafter JP'919) discloses a grafted propylene ethylene copolymer with the unsaturated compound having carboxyl group or its anhydride. The resulting grafted polyolefin with maleic anhydride can be obtained in pellets form for producing a molded product.

Reberts discloses maleated polypropylene produced by a mixture of molten polypropylene and molten maleic anhydride in the presence of a free radical initiator.

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For reducing the final cost of the maleated polypropylene, filler and/or other materials can be added, column 4, lines 20 and 31-32.

It would have been obvious to one of ordinary skill in the art to use a polyolefin resin having a beta-substituted propenyl group in JP'649 for producing a maleic anhydride grafted polyolefin resin by teaching in JP'919 or Roberts because the primary reference to JP'649 does disclose excellent grafting property for the polyolefin resin having beta-substituted propylene group, and thereby, obtain the claimed requirement in the absent of showing of unexpected results.

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References have been considered.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Olga Asinovsky whose telephone number is 571-272-1066. The examiner can normally be reached on 9:00 to 5:30 pm.



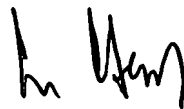
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

O.A

June 21, 2007



James J. Seidleck  
Supervisory Patent Examiner  
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